



## Working adults' well-being: An online self-help goal-based intervention

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An online self-help goal-setting and planning (GAP) intervention to improve working adults' well-being was tested using a longitudinal, randomized crossover design. The study sought to (1) test the effectiveness of the intervention relative to wait-list controls; and (2) test the stability of effects over a 3-month follow-up period. Participants were recruited from the UK Civil Service and were randomized to either a GAP intervention or a wait-list control condition. Wait-list participants then crossed-over to receive GAP. Relative to wait-list controls ( $N = 149$ ), GAP participants ( $N = 158$ ) reported significantly higher levels of positive affect (PA) and flourishing, but similar levels of negative affect (NA) and life satisfaction immediately after the intervention. Longitudinal data were analysed for the whole sample ( $N = 307$ ). Compared to the start of the intervention, participants reported an increase in PA and flourishing directly after the intervention and 3 months later. NA and life satisfaction showed no change by the end of the intervention, but had improved by 3-month follow-up. Completing more modules predicted post-intervention improvements in well-being, accounting for pre-intervention well-being levels. The online self-help format allowed the intervention to be offered with minimal therapeutic support, enabling convenient access by a large group of employees. The study provides an example of a successful adaptation of a clinically proven well-being intervention to make it accessible to working adults.

### Practitioner points

- Well-being interventions proven in clinical settings can be effectively adapted for use in workplace settings with only minor alterations.
- Brief, online self-help interventions can improve working adults' well-being.
- Goal-based interventions can improve working adults' well-being when focused towards goals that are aligned with personal values and have been chosen by the individual.

The well-being of working adults is threatened by increasing levels of workplace stress, with employers expecting work to be done faster, with fewer resources and in non-work time at home (Derks & Bakker, 2014; Rial González, Cockburn, & Irastorza, 2010). Increased stress at work can lead to burn out, characterized by physical, emotional, and cognitive exhaustion and disengagement from work (Demerouti, 2015). To help reduce

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workplace stress and prevent burnout, a range of well-being interventions have been developed to help employees develop new physical exercise habits (e.g., Chu, Koh, Moy, & Müller-Riemenschneider, 2014) and cognitive-behavioural strategies (e.g., Querstret, Copley, & Fife-Schaw, 2017) to manage stress. However, one type of cognitive-behavioural intervention for well-being that has yet to be widely tested in the workplace (Richardson & Rothstein, 2008; Yang, Zhu, Chen, Liu, & Deng, 2016) is training in setting life goals and pursuing them, despite strong evidence for the association between personal goals and well-being.

Klug and Maier (2015) conducted a meta-analysis of 85 studies examining goal pursuit and well-being, of which 25 were studies of working adults. Successfully pursuing goals was significantly associated with higher levels of well-being in working adults, with a moderate average population correlation  $\rho = .39$ . Generating chosen goals (Lyubomirsky, Sheldon, & Schkade, 2005), aligning those goals with personal values (Deci & Ryan, 2008), envisaging future goal success (Oettingen, 2012), and providing support in making plans to achieve those goals (Gollwitzer, 1999) are all aspects of goal-related behaviour that have the potential to positively influence the well-being of working adults. Goal-setting and Planning Skills (GAP; MacLeod, Coates, & Hetherington, 2008) is an established intervention that draws on these empirical studies of goal-related behaviour to provide a comprehensive skills-training programme in goal-setting and planning to improve well-being. GAP has been shown to be effective at improving well-being in predominantly student and adult community populations (Coote & MacLeod, 2012; MacLeod *et al.*, 2008), and for patients in psychiatric (Farquharson & MacLeod, 2014) and forensic settings (Ferguson, Conway, Endersby, & MacLeod, 2009). However, GAP has not been tested as an intervention in the workplace aimed at enhancing employee well-being.

For this study, GAP was adapted for universal workplace access by converting it to an online format, adding working adult case studies and developing a set of short modules designed to fit around working lives. Online training programmes are replacing bibliographic formats as the preferred means of adult learning in the workplace (Cheng, Wang, Moormann, Olaniran, & Chen, 2012) and have been used in previous RCTs of well-being workplace interventions, with beneficial effects on well-being (e.g., Aikens *et al.*, 2014). The online format allows access at times convenient to the user, with relatively low delivery costs post-development (Lal & Adair, 2014). However, two potential drawbacks of online delivery are loss of motivation and disengagement. Some level of support is required to help maintain motivation and a sense of accountability (Andersson, Carlbring, Berger, Almlöv, & Cuijpers, 2009; Donkin & Glozier, 2012), particularly for an intervention for employees with high workloads. Online interventions with support from professionals by email, phone, or short face-to-face contact are more effective at improving well-being than online interventions with no additional support (Andersson & Cuijpers, 2009). In addition to professional support, management support is also important. E-learning tools in the workplace are more likely to be perceived as valuable by employees if the organization and management are clearly supportive (Lee, Hsieh, & Ma, 2011).

Previous trials of GAP have measured the three established components of subjective well-being, PA, negative affect (NA), and life satisfaction, in common with many well-being intervention studies (e.g., Sheldon & Lyubomirsky, 2006). However, there is growing recognition that well-being can be viewed as a broader concept, including aspects such as positive relations with other people and a sense of purpose (Huppert & So, 2009). These wider aspects of well-being have been captured by the concept of flourishing (e.g., Seligman, 2011). Flourishing is a key component of employee well-being. Workplace studies have shown flourishing to be associated with stronger engagement with work

(Bakker & Sanz-Vergel, 2013), better adoption of new technologies (Partala & Saari, 2015), and a greater likelihood of seeking resources and challenges at work (Demerouti, Bakker, & Gevers, 2015). Flourishing was therefore measured alongside the three components of subjective well-being (PA, NA, life satisfaction) in this study. These measures covered the positive aspects of well-being targeted by the online GAP for working adults: increased experience of positive emotions, reduced experience of negative emotions, greater life satisfaction, and a greater sense of flourishing, with meaning and purpose in life.

To provide a robust test of whether online GAP could improve working adults' well-being, employees from three UK Civil Service departments were recruited and were randomly allocated to a GAP condition or a wait-list control group. In a crossover design, the wait-list control participants were also offered GAP immediately post-intervention. Participants were followed up 3 months after completing GAP. The study sought to (1) test the effectiveness of online GAP relative to wait-list controls; and (2) evaluate the stability of any GAP effects 3 months later. It was predicted that relative to controls, GAP participants would show significantly improved well-being post-intervention, with increased positive affect (PA), life satisfaction, and flourishing, along with decreased NA. We also predicted that well-being gains in the whole sample post-GAP would be maintained at 3-month follow-up.

## Method

### *Ethical approval*

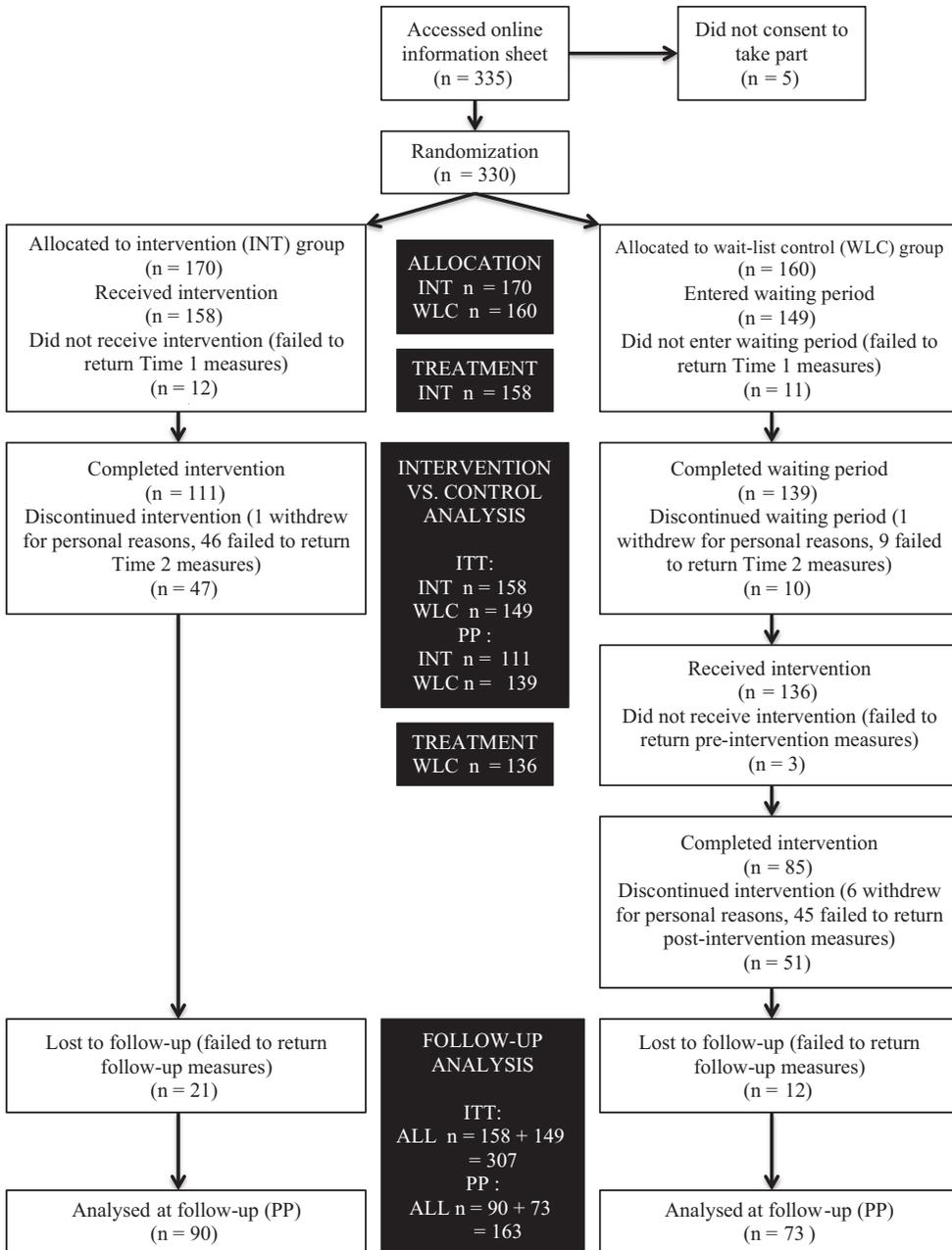
Ethical approval was granted by the relevant UK university Psychology Departmental Ethics Committee (Reference: 2015/030).

### *Experimental design*

A randomized, controlled crossover design was used. Participants were randomly allocated to either receive online GAP immediately (intervention group) or wait 6 weeks and then receive the intervention (wait-list control group). Intervention group participants were asked to complete a set of well-being measures pre-treatment (Time 1/Pre) and post-treatment (Time 2/Post), and 3 months post-treatment (FU). Wait-list control group participants were assessed pre-waiting period (Time 1), pre-treatment (Time 2/Pre), post-treatment (Post) and were also followed up at 3 months post-treatment (FU).

### *Participants*

The target population was working adults. Participants were recruited from three UK Civil Service departments, in line with precedent for using government employees as a representative working adult sample in health and well-being studies (University College London, 2015). All adult employees were considered eligible for inclusion, with no exclusion criteria. The online participant information sheet was accessed by 335 people, of whom 330 (98.5%) gave consent to participate. These 330 participants were mostly female (72.9%), were in the 35–44 (33%) or 45–54 (36%) age bands, identified their ethnic group as White (95.3%), earned a full-time equivalent salary of £20,000–£39,999 (55.5%; US \$25,000–\$50,000), and had worked for their employer for more than 10 years (64%). Figure 1 shows the number of participants who reached each stage of the study, from consent to follow-up.



**Figure 1.** Participant flow through the study and numbers included in intent-to-treat (ITT) and per-protocol (PP) analyses.

**Measures**

*Positive and Negative Affect Schedule*

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) measures affective well-being and has two mood scales: PA and NA. Each scale comprises

10 adjectives describing that affect state, such as ‘excited’ and ‘strong’ for PA and ‘guilty’ and ‘scared’ for NA. For each adjective, participants indicate the extent to which they ‘feel this way generally’ on a scale from 1 (*very slightly or not at all*) to 5 (*extremely*). Each scale has a minimum score of 10 and maximum score of 50. High well-being is indicated by high PA and low NA scores. The ‘generally’ version of the PANAS has good test–retest reliability (PA,  $r = .68$ ; NA,  $r = .71$ ) and internal consistency (PA,  $\alpha = .88$ ; NA,  $\alpha = .87$ ; Watson *et al.*, 1988). Crawford and Henry (2004) confirmed the internal consistency (PA,  $\alpha = .89$ ; NA,  $\alpha = .85$ ) in a large UK adult sample ( $N = 1,003$ ). In this study, internal consistency was checked at Time 1 and found to be good (PA,  $\alpha = .87$ ; NA,  $\alpha = .89$ ).

#### *Satisfaction With Life Scale*

The Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) measures subjective life satisfaction. Participants are asked to rate five statements, such as ‘in most ways, my life is close to my ideal’, from 1 (*strongly disagree*) to 7 (*strongly agree*). In development with a sample of US adults, the scale showed good internal consistency ( $\alpha = .87$ ) and test–retest reliability over a 2-month period ( $r = .82$ ; Diener *et al.*, 1985). In a sample of UK adults, Maltby and Day (2004) also found good internal consistency ( $\alpha = .85$ ). Internal consistency at Time 1 in this study was  $\alpha = .87$ .

#### *Flourishing Scale*

The Flourishing Scale (Diener *et al.*, 2010) comprises eight statements about personal well-being, including engagement with life (e.g., ‘I lead a purposeful and meaningful life’) and positive relationships with others (e.g., ‘I actively contribute to the happiness and well-being of others’). Participants rate each statement from 1 (*strongly disagree*) to 7 (*strongly agree*). All items are positively phrased, so the highest total score of 56 represents a high level of flourishing. In a US adult sample, Diener *et al.* (2010) found the scale to have good internal consistency ( $\alpha = .87$ ) and test–retest reliability ( $r = .71$ ). Internal consistency at Time 1 in this study was  $\alpha = .88$ .

#### *Adherence and skills survey*

The adherence and skills survey was designed for this study. Participants were asked to indicate how many modules they had completed and whether work goals had impacted on their ability to devise personal goals, from 0 (*no impact*) to 10 (*severe impact*). Participants were also asked to rate on a scale of 0 (*not at all*) to 4 (*extremely*) how helpful they had found the intervention overall and how helpful each module had been for developing specific skills in GAP.

#### *GAP intervention (MacLeod et al., 2008)*

The GAP intervention helps individuals to identify approach-orientated, rather than avoidance-orientated, goals linked to their values, develop action steps to move towards selected goals, anticipate and deal with obstacles, and maintain motivation. GAP can be delivered in a group or a self-help format. In this study, an online self-help version of GAP was developed, adapted for a population of working adults, and broken down into six modules covering the content of the programme. Module 1 asked participants to set personal goals (in work or home life) and refine them to ensure they were personally

important to them (self-concordant), not determined by others. Working towards voluntary, self-concordant goals can improve PA (Lyubomirsky *et al.*, 2005) and life satisfaction (Judge, Bono, Erez, & Locke, 2005). In Module 2, participants were asked to imagine achieving their goals, which can improve motivation to actively pursue goals (Oettingen, Mayer, & Brinkmann, 2010) and increase an individual's sense of purpose, one aspect of flourishing (Schmitt, Zacher, & de Lange, 2013). Module 3 encouraged participants to make written plans for achieving their goals. Having specific and realistic plans to achieve goals brings improvements in PA, life satisfaction, and flourishing, even before the goals have actually been achieved (Cheavens, Feldman, Gum, Michael, & Snyder, 2006; MacLeod & Conway, 2005; Prenda & Lachman, 2001). Modules 4 and 5 involved participants putting their plans into action, and making amendments to goals and to plans in response to obstacles. Discarding unattainable goals can reduce NA, while pursuing revised goals can increase PA and a sense of purpose in life (Wrosch, Scheier, & Miller, 2013). The final module, Module 6, provided an opportunity to review the materials in Modules 1–5, to embed skills development.

Each module included guidance to be read online, examples tailored for working adults, and downloadable worksheets to help develop goal-setting and planning skills. To encourage active engagement, modules included several worksheets to complete, each involving planning or skills development, with subsequent module text assuming the worksheet had been completed. Modules were designed to take around 30 min each, with all six to be completed over a 5-week period.

### **Procedure**

Employees were invited to participate in one of three study waves in July, September, or November 2015. The invitations were sent in group emails and corporate news blogs from senior managers in each recruiting department. Departments advised that management communications would ensure that as many staff as possible were made aware of the opportunity to participate in the study. To try to avoid participants feeling forced to participate by managers, the participant information sheet emphasized that the study was voluntary, and participation would be confidential and would not impact how participants were treated at work. Around 4,500 staff received emails or had access to corporate blogs, of which 330 gave consent to participate. Participants were randomly assigned in chronological order of consent to either the intervention group ( $N = 170$ ) or the wait-list control group ( $N = 160$ ). The randomization schedule had been generated online using a block size of 1,000 to achieve a close approximation of simple randomization (Dallal, 2013). The researcher was aware of which group participants had been assigned to. Participants were not told that they were in the intervention wait-list control group, but were told which date they were due to start the intervention. To encourage participation and adherence, participants were offered the opportunity to enter into a prize draw for one of two £100 shopping vouchers, on completion of follow-up measures.

Two weeks after starting the intervention, participants received a support email indicating that by now, they would ideally have completed the first three modules. The email also offered a 20-min support phone call with the researcher to review progress and discuss any issues with making plans for their chosen goals. Those who wanted a call were asked to reply with suitable dates/times, and an appointment was agreed by email. A total of 12 participants requested support calls, each of which lasted between 15 and 20 min.

## Results

For the intention-to-treat (ITT) analysis, missing data resulting from attrition (51%; see Figure 1) were imputed using the conservative last observation carried forward (LOCF) method (European Medicines Agency, 2010). For the per-protocol (PP) analysis, listwise deletion was performed, leaving only participants who had completed outcome measures post-intervention at Time 2 ( $N = 250$ ) and then at follow-up ( $N = 163$ ). ITT outcomes are reported throughout this article; PP outcomes are reported if they differed in significance from the ITT outcomes.

Box–Cox transformations were applied to achieve normality and remove outliers, with lambda values determined by an iterative estimation process (Osborne, 2010). Multivariate analysis of variance (MANOVA) confirmed that the study wave in which participants were recruited was not associated with any of the dependent variables (PA, NA, life satisfaction, and flourishing) between Time 1 and Time 2, Pillai's Trace  $V = .04$ ,  $F(8, 490) = 1.22$ ,  $p = .28$ , or across pre-intervention, post-intervention, and follow-up, Pillai's Trace  $V = .04$ ,  $F(8, 316) = 0.74$ ,  $p = .66$ . Participant data were therefore combined over all three study waves for all analyses.

### **Effect of the intervention relative to controls**

To establish whether GAP participants reported improvements in well-being relative to controls, a MANCOVA compared groups on Time 2 scores for PA, NA, life satisfaction, and flourishing, with Time 1 scores entered as covariates. Table 1 shows the mean scores and standard deviations on the dependent variables at Time 1 and Time 2 for the intervention and wait-list control groups. MANCOVA assumptions were met. There was a significant multivariate effect for group, Pillai's Trace  $V = .038$ ,  $F(4, 298) = 2.94$ ,  $p = .021$ ,  $\eta_p^2 = .04$ .

Separate ANCOVAs were carried out for the Time 2 score of each outcome variable, controlling for the relevant Time 1 scores. At Time 2, participants in the GAP group showed significantly higher PA,  $F(1, 304) = 5.34$ ,  $p = .02$ ,  $\eta_p^2 = .02$ , and flourishing,  $F(1, 304) = 11.89$ ,  $p = .001$ ,  $\eta_p^2 = .04$  scores, relative to those in the control group. There were no significant differences between the groups for NA,  $F(1, 304) = 0.57$ ,  $p = .45$ ,  $\eta_p^2 = .002$ , or life satisfaction,  $F(1, 304) = 3.67$ ,  $p = .06$ ,  $\eta_p^2 = .01$ , although it is noted that the effect for life satisfaction is close to significance and this was the one case where there was a difference in significance in the PP analysis,  $F(1, 247) = 6.78$ ,  $p = .01$ ,  $\eta_p^2 = .03$  (for PP analysis). As predicted, GAP participants showed an overall improvement in well-being relative to controls with statistically significant improvements in flourishing and PA, at the level of individual well-being variables, along with an indication of an increase in life satisfaction.

### **Effect of the intervention over time**

Repeated-measures ANOVAs were used to find out whether well-being improved between pre-intervention and post-intervention, and between pre-intervention and follow-up, for all participants. In the absence of a control group in this analysis (due to the wait-list group crossing over to receive GAP at T2), the possible effect of regression to the mean (RTM) was controlled for using adjustments to post-intervention and follow-up variables (Barnett, van der Pols, & Dobson, 2005; Nielsen, Karpatschof, & Kreiner, 2007). Table 2 shows the mean scores and standard deviations on the dependent variables at pre-, post-intervention, and follow-up. A repeated-measures MANOVA was carried out

**Table 1.** Means (SDs) for outcome variables at T1 and T2 for each group

	Positive affect				Negative affect			
	INT group		WLC group		INT group		WLC group	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
Before INT treatment (T1)	158	32.17 (6.51)	149	32.42 (6.64)	158	20.28 (7.37)	149	20.24 (7.08)
After INT treatment (T2)	111	34.24 (6.68)	139	32.12 (7.22)	111	17.95 (6.58)	139	19.12 (6.78)
	Life satisfaction							
	Flourishing							
Before INT treatment (T1)	158	22.18 (6.72)	149	22.22 (5.95)	158	40.99 (7.85)	149	42.48 (7.16)
After INT treatment (T2)	111	24.22 (6.66)	139	22.51 (5.97)	111	43.74 (7.37)	139	42.41 (6.63)

Note. INT = intervention; WLC = wait-list control; T1 = before GAP course (INT group), before wait-list period (WLC group); T2 = after GAP course (INT group), after wait-list period and before GAP course (WLC group).

**Table 2.** Means (SDs) for outcome variables at pre, post, and follow-up, for whole sample

	N	Positive affect Mean (SD)	Negative affect Mean (SD)	Life satisfaction Mean (SD)	Flourishing Mean (SD)
Before treatment (pre)	294	32.37 (6.60)	19.79 (7.20)	22.46 (6.40)	41.63 (7.37)
After treatment (post)	196	33.65 (6.68)	18.28 (6.75)	23.66 (6.66)	43.41 (7.50)
3 months later (FU)	163	33.55 (7.18)	17.82 (7.48)	23.79 (6.79)	43.81 (8.56)

Note. INT = intervention; WLC = wait-list control; pre = before GAP course (INT group), after wait-list period and before GAP course (WLC group); post = after GAP course completion (WLC group); FU = follow-up 3 months after GAP course ends.

with all four dependent variables across three time points (pre, post, follow-up). There was a significant multivariate effect across time, Pillai's Trace  $V = .07$ ,  $F(8, 1220) = 5.35$ ,  $p < .001$ ,  $\eta_p^2 = .03$ .

Separate repeated-measures ANOVAs were run for each outcome variable. Table 3 shows the outcome of the repeated-measures ANOVAs across all three time points, and follow-up comparisons between pre- and post-intervention, and between pre-intervention and follow-up. Immediately after the 5-week intervention period and 3 months later, participants reported higher levels of PA and flourishing than before the intervention started. NA and life satisfaction did not change significantly over the course of the 5-week intervention period. However, by 3-month follow-up, NA had reduced and life satisfaction had increased compared to pre-intervention levels, as predicted.

### Adherence and skills survey responses

One hundred and ninety-six participants completed the adherence and skills survey at the end of the intervention. The majority of those responding to the survey reported having accessed Modules 1, 2, and 3 (86%, 78%, 70% of respondents, respectively), but less than half of respondents reported accessing Modules 4, 5, and 6 (49%, 34%, 20% of respondents, respectively). The ratio of reported access to Module 1 (86%) compared to Module 6 (20%) was 4.3:1. The intervention website did not record unique visitors, but did record the number of times each page was viewed. The ratio of actual views of pages of Module 1 (596 views) compared to those of Module 6 (127 views) was 4.8:1, similar to the ratio of reported access, supporting the validity of participants' responses. Work-related goals were cited by 56% of respondents as having moderate to severe impact (rating 4/10 or higher) on progress with the intervention.

Overall, the intervention was rated as being moderately to very helpful ( $M = 2.32$ ,  $SD = 0.95$ ). Mean helpfulness ratings for individual GAP skills were also in the moderately to very helpful range: generating goals ( $M = 2.31$ ,  $SD = 1.01$ ), checking goals are in line with personal values ( $M = 2.16$ ,  $SD = 1.12$ ), planning actions towards goals ( $M = 2.37$ ,  $SD = 1.11$ ) and overcoming obstacles ( $M = 2.02$ ,  $SD = 1.20$ ). A one-way ANOVA with type of GAP skills (generating, aligning, planning, obstacles) as a factor showed a significant difference in helpfulness ratings between the four skills types,  $F(2.74, 323.62) = 6.32$ ,  $p = .001$ ,  $\eta_p^2 = .05$ , indicating that the intervention was rated as being more helpful in developing some GAP skills than others. Follow-up  $t$ -tests with a Bonferroni corrections found that the intervention was thought to be significantly more helpful in developing skills for generating goals,  $t(118) = 2.98$ ,  $p = .003$ , and planning actions towards goals,  $t(118) = 5.03$ ,  $p < .001$ , than overcoming obstacles.

**Table 3.** Repeated-measures ANOVA results for outcome variables

	Positive affect		Negative affect		Life satisfaction		Flourishing	
	<i>F</i>	$\eta_p^2$	<i>F</i>	$\eta_p^2$	<i>F</i>	$\eta_p^2$	<i>F</i>	$\eta_p^2$
Across pre, post, and FU	15.36***	.05	3.61*	.01	3.35*	.01	14.18***	.04
Pre versus post	24.03***	.07	0.11	.00	3.63	.01	14.72***	.05
Pre versus 3 month FU	18.52***	.06	4.88*	.02	5.43*	.02	21.56***	.07

Notes. INT = intervention; WLC = wait-list control; Pre = before GAP course (INT group), after wait-list period and before GAP course (WLC group); Post = after GAP course completion (WLC group); FU = follow-up 3 months after GAP course ends.

\* $p < .05$ ; \*\*\* $p < .001$ .

To test the extent to which observed improvements in well-being over time could be predicted by the number of modules completed, hierarchical multiple regressions were carried out on the post-intervention score of each outcome variable. Pre-intervention scores were entered first. Imputation using LOCF was not appropriate for data from a one-off survey, so the regression analyses were carried out on a PP basis ( $N = 163$ ). Table 4 presents the regression outcomes. As expected, post-intervention scores were strongly associated with pre-intervention well-being levels, but the number of modules completed was a significant, additional contributing factor to post-intervention scores on all four outcome variables. Completing more modules was significantly associated with improvements in PA, NA, life satisfaction, and flourishing following the intervention.

## Discussion

The aim of the present study was to determine whether a new online adaptation of a GAP self-help intervention (MacLeod *et al.*, 2008) could improve working adults' well-being in a randomized controlled trial. Online GAP had a largely positive effect on working adults' well-being. As predicted, when compared to wait-list controls, GAP participants reported higher levels of PA and flourishing. The effect size was small for PA and small to medium for flourishing (Cohen, 1988). There was also an indication of change in life satisfaction, although this was at the level of trend in the main analysis. In the longitudinal phase, compared to before the intervention, participants reported improved PA and flourishing directly after the intervention, and improvements to all four components of well-being 3 months later. Effect sizes for NA and life satisfaction were small, but were in the small to medium and medium range for PA and flourishing (Cohen, 1988).

These findings lend support to the architecture of sustainable change theory (Lyubomirsky *et al.*, 2005) that choosing goals and voluntarily working towards them leads to sustained increases in well-being, at least in the short-term 3-month follow-up in the present study. The findings also demonstrate that online GAP, an empirically derived brief goal-based intervention, can improve well-being in working adults. The effect sizes are small to medium, but delivery requires minimal resource input, so online GAP has practical value as an employee well-being intervention.

Contrary to the hypotheses, there was no indication of reduced NA or increased life satisfaction immediately after the GAP intervention. The increases in PA and flourishing immediately following the GAP intervention might have been assumed to bring

**Table 4.** Hierarchical multiple regression analyses predicting post-intervention well-being from number of modules completed

	Positive affect			Negative affect			Life satisfaction			Flourishing		
	$\Delta R^2$	$\beta$	$\eta_p^2$	$\Delta R^2$	$\beta$	$\eta_p^2$	$\Delta R^2$	$\beta$	$\eta_p^2$	$\Delta R^2$	$\beta$	$\eta_p^2$
Step 1 – Pre-intervention score	.70***			.69***			.72***			.75***		
Step 2 – No. of modules completed	.04***	.19	.12	.01*	-.11	.03	.015**	.12	.05	.02***	.14	.05

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

concurrent decreases in NA. However, PA and NA are quasi-independent (Watson, Clark, & Carey, 1988). Well-being interventions therefore face a challenge in focusing on positive strengths, but having an impact on both PA and NA. A number of other well-being interventions have reported similar findings to the present study: an increase in PA but no change in NA initially, with a subsequent decrease in NA by follow-up (e.g., Odou & Vella-Brodrick, 2013). It may be a more general pattern among well-being interventions that NA is more resistant to change than PA initially, but may reduce once the skills learned during the intervention have been put into practice over a longer period. As more high-quality longitudinal RCTs of well-being interventions are published, this hypothesis could be explored through meta-analysis.

As with NA, life satisfaction levels showed no change following the intervention, but had improved by follow-up. Bauer and McAdams (2004) found that life satisfaction was associated with having community-related goals. The high workloads cited by participants in the current study as reasons for not completing the modules may have impeded their ability to spend time in their community outside work, hampering life satisfaction increases. Krings, Bangerter, Gomez, and Grob (2008) found that for adults of working age, life satisfaction was associated with goal achievement. Over the 3-month follow-up period, it is possible that participants had time to engage with their community-related goals and achieve some goals, resulting in longer-term improvements in life satisfaction. These hypotheses could be explored in future research into the effectiveness of GAP in workplace interventions by including measures such as the Inter-goal Relations Questionnaire (IRQ; Riediger & Freund, 2004). The IRQ explores how different types of work and life goals interact to impede goal progress. Using the IRQ and other measures examining mechanisms of change might also help explain why PA or flourishing still increased significantly during all phases of the study, remaining apparently unaffected by the reported impact of workloads and work-related goals on goal progress.

Although it had been expected that the intervention would bring improvements in well-being, its success in doing so despite only 20% of participants reaching the final module is worth further consideration. It is possible that the activities in the earlier modules had a strong positive effect on well-being, even if participants failed to progress any further. The first module about generating goals was completed by 86% of participants, suggesting that, at the very least, most participants in the study wrote a list of goals and selected two that they felt personally motivated to achieve and that were approach- rather than avoidance-orientated goals. With rising demands from employers (Rial González *et al.*, 2010), working adults are likely to be trying to achieve a number of

goals at work which they have not had a role in setting, requiring controlled motivation rather than autonomous motivation (Sheldon & Elliot, 1998). Lack of personal control in the workplace can lead to depression, anxiety, and anger (Ross & Mirowsky, 2013). GAP offered an opportunity to set autonomously motivated goals, potentially promoting keen engagement with the material presented in the initial modules and enhancing the effectiveness of those modules.

A key strength of the present study was the accessibility of the intervention. The online self-help format, agreed with a focus group of working adults, allowed the intervention to be offered with minimal therapeutic support, enabling convenient access by a large group of employees at relatively low-cost. The longitudinal, randomized controlled design and the positive findings in the present study arguably provide strong enough evidence for the intervention to be confidently offered to working adults in its current format. A further strength of the present study was the inclusion of flourishing as an outcome variable. By measuring flourishing, the present study has demonstrated that a key component of working adults' well-being can be improved with training in personal goal-setting and planning.

A limitation of the present study was that mechanisms of change were not measured. The longitudinal, randomized controlled design enabled improvements in well-being to be attributed to the intervention, which was based on empirically proven theories of change, but mechanisms of change were not confirmed. A pre–post knowledge test may have helped identify which parts of the intervention helped to bring about change in participants' well-being. A further limitation was the under-representation of males, young adults, and non-White participants. Online GAP is designed to be a voluntary self-help intervention and 4,000 staff were told about the study and invited to take part, so it is possible that the present study sample represented a typical demographic profile of future users of online GAP. It is not uncommon for online well-being studies to have fewer males, young adults, and non-White participants (e.g., Howells, Ivtzan, & Eiroa-Orosa, 2016). Nonetheless, to improve the generalizability of findings to the adult working population, future GAP trials may benefit from proactive recruitment strategies to increase participation from under-represented groups.

A number of suggested adaptations for future studies have already been mentioned, including measuring mechanisms of change and finding ways to recruit more males, young adults, and employees from a wide range of ethnic groups. Further adaptations could be made to improve intervention adherence by providing regular reminders by email and incentives for timely completion. The intervention was designed to be easily accessible, with minimal administrative input. However, automated reminders could be incorporated. Cooley, Pedersen, and Mainsbridge (2014) conducted a qualitative evaluation of an online workplace intervention to improve physical health through exercise. Participants reported finding automated reminders initially annoying because it disrupted their workflow, but began to adhere more closely to the intervention once they had become habituated to the reminders and had adapted their work behaviour around them. In addition to automated reminders, motivation to adhere to the intervention may be increased by encouraging social contact to discuss progress, perhaps in online or in-person learning action groups. Social interaction can help increase motivation and lead to more staff becoming interested in the intervention (Cooley *et al.*, 2014). A third suggestion for increasing adherence would be to add new content to Modules 4–6. Participants who did not complete these later modules may have been discouraged by their focus on practicing and reviewing action plans already made in earlier modules. Practice and review are important skills-learning processes, but adherence may be

improved by adding new learning material to these modules, including further strategies for maintaining well-being such as breathing exercises, alongside the modules' existing practice and review components.

The present study provided empirical evidence that working adults' well-being can be improved through access to GAP, an online self-help goal-based intervention. Compared to the start of the intervention, participants reported an increase in PA and flourishing, directly after the intervention and 3 months later. NA and life satisfaction showed no change by the end of the intervention, but had improved by 3-month follow-up. The study contributes to the evidence base for the effectiveness of online well-being workplace interventions and provides a potential model for adapting clinically proven interventions to make them accessible to working adults.

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